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QUALITY MANAGEMENT AND FOOD SAFETY MANAGEMENT SYSTEMS IN THE POLISH FOOD INDUSTRY

У статті проаналізовано системи управління якістю та стандарти, що застосовуються компаніями харчової промисловості. Описано обов'язкові системи: Good Hygiene Practices (GHP), Good Manufacturing Practices (GMP) та системи аналізу небезпек та критичної точки контролю (HACCP), а також ті, які є добровільними для виробників: ISO 22000, ISO 9001, BRC, IFS. Їх реалізація важлива для забезпечення якості та безпечності харчових продуктів для споживачів. Крім того, сертифікація також є одним з важливих факторів підвищення конкурентоспроможності компаній.

Підприємства, що працюють на ринку, особливо в харчовій промисловості, зобов'язані використовувати Good Hygiene Practices (GHP), Good Manufacturing Practice (GMP) та Аналіз небезпек та критичного контролю (HACCP). Деякі з них не обмежуються лише вищезазначеним – вони також впроваджують необов'язкові системи, такі як ISO 22000 або ISO 9001. Приватні стандарти також відіграють принципову роль. Багато в чому це пов'язано з наявністю розгалужених торгових мереж. Харчові компанії, які хочуть співпрацювати з ними, повинні мати впроваджені стандарти: Глобальні стандарти безпеки харчових продуктів BRC та/або Міжнародні рекомендовані стандарти IFS Food. Стандарти BRC та IFS розроблені для виробників продуктів харчування. Необхідною умовою їх розвитку стала уніфікація вимог до постачальників у галузі безпеки харчових продуктів. Сертифікат, виданий акредитованими органами з сертифікації, – це документ, який підтверджує, що вимоги були виконані. На жаль, існує проблема взаємного визнання цих сертифікатів одержувачами. Компанії, що співпрацюють з різними торговими мережами, змушені застосовувати обидва ці стандарти.

Ключові слова: *якість, система менеджменту, стандарти, безпека харчових продуктів.*

В статье проанализированы системы управления качеством и стандарты, применяемые компаниями пищевой промышленности. Описаны обязательные системы: Good Hygiene Practices (GHP), Good Manufacturing Practices (GMP) и системы анализа опасностей и критической точки контроля (HACCP), а также те, которые являются добровольными для производителей: ISO 22000, ISO 9001, BRC, IFS. Их реализация важна

для обеспечения качества и безопасности пищевых продуктов для потребителей. Кроме того, сертификация также является одним из важных факторов повышения конкурентоспособности компаний.

Предприятия, работающие на рынке, особенно в пищевой промышленности, обязаны использовать Good Hygiene Practices (GHP), Good Manufacturing Practice (GMP) и Анализ опасностей и критического контроля (HACCP). Некоторые из них не ограничиваются только вышеупомянутым – они также внедряют необязательные системы, такие как ISO 22000 или ISO 9001. Частные стандарты также играют принципиальную роль. Во многом это связано с наличием разветвленных торговых сетей. Пищевые компании, которые хотят сотрудничать с ними, должны иметь внедренные стандарты: Глобальные стандарты безопасности пищевых продуктов BRC и/или Международные рекомендованные стандарты IFS Food. Стандарты BRC и IFS разработаны для производителей продуктов питания. Необходимым условием их развития стала унификация требований к поставщикам в области безопасности пищевых продуктов. Сертификат, выданный аккредитованными органами по сертификации – это документ, подтверждающий, что требования были выполнены. К сожалению, существует проблема взаимного признания этих сертификатов получателями. Компании, которые сотрудничают с различными торговыми сетями, вынуждены применять оба эти стандарта.

Ключевые слова: *качество, система менеджмента, стандарты, безопасность пищевых продуктов.*

Introduction. Globalization has caused companies to face stronger competition on the market. The factor that gains more importance is quality, which consists in meeting the current and future customer needs. Focusing on the customer, meeting his expectations, is a basic condition for the functioning of any company in the market.

Legal regulations in the field of food safety. The main legal regulations in the field of food safety are the Food Law of the European Union, which refers to the FAO/WHO Codex Alimentarius, which was developed by the Codex Alimentarius Commission, established by the United Nations Food and Agriculture Organization (FAO) and the World Health Organization (WHO). This Codex contains a set of internationally accepted food standards, codes of practice, recommendations and guidelines. In addition, it contains a number of general and specific standards for ensuring food safety. In particular, the International Code of Practice – General Principles of Food Hygiene – and its Annex, including the Hazard Analysis System and the Critical Control Point – HACCP, may be relevant. The purpose of the functioning of Codex Alimentarius is to take care of consumer health protection and provide guarantees of applying fair practice in the entire food industry, in order for food introduced to the market to be safe and of good quality.

The main legal regulations covering the issues of food hygiene and safety in the European Union are the Regulations of the European Parliament and the Council: – No. 178/2002 of 28 January 2002 on general principles and requirements of food law, establishing the European Food Safety Authority and specifying procedures in the field of food safety – No. 852/2004 of 29 April 2004 on the hygiene of foodstuffs. No. 853/2004 of 29 April 2004 laying down specific hygiene rules for food of animal origin; – No. 854/2004 of 29 April 2004 laying down specific rules for the organization of official controls on products of animal origin intended for human consumption; – No. 882/2004 of 29 April 2004 on official controls

performed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules. In Poland, the basic framework legal act regulating these issues is the Act of 25 August 2006 on Food and Nutrition Safety.

Obligatory quality management systems. The obligatory quality management systems, the principles of which must be implemented in food plants in the European Union, include: – Good Hygienic Practice (GHP), – Good Manufacturing Practice (GMP), – Hazard Analysis and Critical Control Points (HACCP).

Implementation and application of Good Hygiene Practice and Good Manufacturing Practice in companies producing and/or trading in food has been in force since 20 July 2000. On the other hand, the implementation and application of the principles of HACCP system is obligatory from: – 1 December 1996 in enterprises producing and marketing dietetic products and nutrients; – 1 May 2004, i.e. from the date of Poland's accession to the European Union, in enterprises involved in the production and/or marketing of food. The starting point for implementation of quality management systems in food plants is the introduction of the principles of Good Hygiene Practice and Good Manufacturing Practice. The Good Hygiene Practice (GHP) is "action that must be taken and hygiene conditions that must be met and controlled at all stages of production or marketing to ensure food safety." The principles of good hygiene practice are identified with the Prerequisite Programmes and include: – localization, environment and infrastructure of the plant, – plant facilities and their functional layout, – machinery and equipment, – washing and disinfection processes, – water supply, – waste control, pest prevention and control, – staff training, – staff hygiene, – keeping documentation and records on GHP. The Good Manufacturing Practice (GMP) is "action that must be taken and conditions that must be met for food production to take place in a manner that ensures food safety, in accordance with its intended use." Good Manufacturing Practice applies: – acceptance of raw materials and materials, – storage and handling of raw materials, – pre-treatment processes, – basic processing processes, – internal transport, – storage of finished products, – external transport and distribution of products.

The Hazard Analysis and Critical Control Point (HACCP) is a "procedure to ensure food safety by identifying and assessing the scale of hazards from the point of view of food health requirements and the risk of hazards occurring during all stages of food production and marketing; the system also aims to identify methods for eliminating or reducing hazards and establishing corrective actions." The producer or the entity marketing food is directly and completely responsible for food safety – hazard analysis, – determination of critical control points, – determination of critical limits, – determination and introduction of monitoring system at critical control points, – determination of corrective actions, – determination of verification procedure, – development and maintenance of HACCP system documentation.

Hazard identification is the identification of all types of threats that must be prevented, eliminated or reduced to an acceptable level. The significance of these threats is assessed and risk analysis is carried out. Critical Control Points (CCPs) are defined as the selection of places to be subject to the necessary control, preventing or eliminating food safety risks or reducing the risk to an acceptable level. Setting critical limits (tolerance limits) is the adoption of specific criteria for

checkpoints. Critical limits separate the acceptability or unacceptability of the prevention, elimination or reduction of identified hazards. Introduction of a monitoring system shall consist in establishing and implementing effective monitoring procedures at critical control points. The purpose of monitoring is to provide assurance that a specified critical control point is under control. For each critical control point, corrective actions to be taken in case a CCP does not meet the established requirements should be identified. These actions should be established in advance so that, if a deviation from the critical limit is detected by monitoring, they can be taken without hesitation. The purpose of verification is to determine whether the measures referred to in points 1 to 6 are working properly, i.e. whether the implemented HACCP system is functioning properly and is therefore effective. HACCP procedures must be documented. Efficient and accurate documentation is an important element of the HACCP system application, because the documentation is the basis for assessment of the correctness of system functioning. According to Codex Alimentarius recommendations, the HACCP system should be implemented using twelve steps (Turlejska and Pelzner, 2013):

– Creation of a HACCP team
– Product description
– Determination of the intended use of product by the consumer
– Development of a chart (flowchart) of the technological process
– Verification of the technological process diagram
– Identification and analysis of all potential hazards (Principle 1)
– Determination of critical control points – CCP (Principle 2)
– Establishment of limits for each CCP (Principle 3)
– Establishment of a monitoring system for each CCP (Principle 4)
– Establishment of corrective actions (Principle 5)
– Establishment of a verification procedure (Principle 6)
– Record keeping (Principle 7).

The HACCP system is a quality management method: – systematic – is based on the implementation of seven basic principles, – specific – is developed individually for each company, – preventive – its essence is to prevent the occurrence of potential threats to food safety, – critical and creative – requires constant search for new solutions, – requires teamwork, as employees of various specialties are involved here. It is obligatory to implement the principles of HACCP system, however, there is no obligation to hold a certificate. Nevertheless, some food plants are subject to the certification process. Companies take these actions, because having a certificate by the organization increases its credibility with business partners, thus contributing to the improvement of competitiveness.

Non-obligatory quality management systems. In addition to the obligatory quality systems, there are also non-obligatory systems and standards. The most important and most frequently used systems and standards in food production companies are: – ISO 22000 – Food Safety Management – ISO 9001 – Quality Management – International Featured Standards – IFS Food – BRC Global Standards for Food Safety. The ISO 22000 family of standards – Food safety management, like other ISO standards, is issued by the International Organization for Standardization (ISO). It was published in 2005. It is an extended version of the HACCP system. The idea behind its

development was to create conditions that would enable the identification, control and management of hazards that may occur during the production and storage of food products (Kędzior and Pitasińska, 2005). Ensuring food safety along the entire food chain is particularly important in a globalized world, where products sometimes cross several borders before reaching the final consumer. The ISO 22000 standards are dedicated to all entities directly and indirectly involved in the production and marketing of food, i.e. "from farm to fork". They are specifically designed for use by organizations seeking a more focused, coherent and integrated food safety management system than required by law. ISO 22000 combines the key elements necessary to ensure food safety. It takes into account the initial programmes, HACCP principles, the management system and communication between the different actors in the food chain (Upper 2008).

The family of ISO 22000 standards includes:

ISO 22000:2005 (PN-EN ISO 22000:2006) – contains general guidelines for food safety management;

ISO 22004:2014 – contains general information on the application of ISO 22000;

ISO 22005:2007 – focuses on traceability in the feed and food chain;

ISO / TS 22002-1:2009 – contains specific conditions for the food production;

ISO / TS 22002-2:2013 – contains specific prerequisites for catering;

ISO / TS 22002-3:2011 – contains detailed conditions for breeding;

ISO / TS 22002-4:2013 – contains detailed conditions for the production of food packaging;

ISO / TS 22003: 2013 – contains guidelines for control and certification bodies.

The requirements of ISO 22000 can be successfully applied by all actors in the food chain: – manufacturers of agricultural products, fodder, primary products; – transport and logistics companies; – wholesale trade; – retail trade (shops, markets); – bars, restaurants, catering; – manufacturers of machinery and equipment; – producers of packaging, – producers of cleaning products; – producers of ingredients and additives; – producers of pesticides, fertilizers, medicines, dietetic products.

ISO standards of 9000 series – Quality management was first published in 1987. They currently include: – ISO 9001:2015 – specifies the requirements for the quality management system; – ISO 9000:2015 – covers basic terms and language; – ISO 9004:2009 – contains guidelines for further improvement of the organization in particular aspects of the existing management system; – ISO 19011:2011 – specifies guidelines for internal and external audits of the quality management systems. One standard in this family that is certified is ISO 9001:2015. This is currently the most popular standard of all international standards. This is due to its universal character. It can be used in all organizations, regardless of the type of business activity, and thus also by companies in the food industry. The ISO 9004: 2009 standard is recommended for those organizations that want to improve their system higher than the requirements of ISO 9001 (e.g. in terms of effectiveness and efficiency). Each paragraph of the ISO 9001 standard is covered and developed here, so that the

user gets instructions on how to improve a given paragraph of the ISO 9001 standard. The quality management system according to ISO 9000 is based on eight principles (Wawak 2011):

– Customer orientation
– Leadership
– Employee involvement
– Process approach
– Systemic approach to management
– Continuous improvement
– Fact-based decision making
– Mutually beneficial relations with suppliers.

In some cases, the implementation of these systems is not sufficient. Companies that offer their products to large retail chains must have implemented and hold certificates of standards: Global Standards for Food Safety BRC and/or International Featured Standards IFS Food. BRC Global Standards for Food Safety is owned by the British Retail Consortium (BRC). The standard was first published in 1998 and developed two years earlier. Since then, it has been regularly updated to keep abreast of the latest developments in food safety. Since 1 July 2015, the 7th version of this standard has been in force. The document is addressed to food producers and private label suppliers to British hypermarkets and other international networks. It is used in more than 120 countries. Due to the high demand and in order to facilitate the implementation of the standard in food industry companies around the world, the standard has been translated into many languages, including Chinese. The objectives of BRC Global Standards for Food Safety are (Jeznach 2007):

– definition of requirements for the safety and quality of food products and their compliance with legal requirements,

– standardization of requirements for all food producers and food chain participants supplying private label products to retail chains,

– approval of specific rules, which are the basis for certification of companies supplying products to retail chains,

– standardization of rules for qualification of suppliers and reduction of the number of audits.

– Requirements of the BRC standard, included in chapter II of the standard, are related in detail to (BRC 2015):

– Involvement of the highest management – its continuous improvement, organizational structure, responsibility and authority of management staff.

– Food safety plan – twelve steps in the implementation of HACCP system.

– Food safety and quality management system – including documentation, monitoring and approval of suppliers and raw materials, internal audits, corrective and preventive actions, supervision of non-compliant products, traceability, complaint handling, customer orientation.

– Standards concerning the plant – in the scope of, among others: external standards, safety, plant layout, sequence of processes and movement of personnel, media, equipment, inspections, pollution control, maintenance of hygiene and order, waste management, storage, shipping and transport.

– Product control – design, development, labelling, control, authenticity and release of products, packaging, allergen monitoring.

– Process control – operation control, labeled and packaging control, quantity: weight, volume, number of pieces; calibration and control of measuring and monitoring devices.

– Personnel – training, personal hygiene, medical examinations, protective clothing.

The BRC standard sets out certain requirements that are considered to be critical during certification and are referred to as "essential requirements".

Non-compliance with the above fundamental requirements leads to failure to issue or withdrawal of the certificate.

Conclusion. Enterprises operating on the market, especially in the food industry, are obliged to use Good Hygiene Practice (GHP), Good Manufacturing Practice (GMP) and Hazard Analysis and Critical Control Point (HACCP) systems. Some of them are not limited only to the above – they also implement non-compulsory systems, such as ISO 22000 or ISO 9001. Private standards also have a fundamental role. This is largely due to the presence of extensive retail chains. Food companies that want to cooperate with them must have implemented standards: Global Standards for Food Safety BRC and/or International Featured Standards IFS Food. The BRC and IFS standards have been developed for food manufacturers. The prerequisite for their development was the unification of requirements for suppliers in the field of food safety. A certificate issued by accredited certification bodies is a document confirming that the requirements have been met. Unfortunately, there is a problem of mutual recognition of these certificates by recipients. Companies cooperating with different retail chains are forced to implement both these standards.

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